Loft and Office Buildings of - Structural Concrete -

THE "VARICK STREET" BUILDING NOW UNDER CONSTRUCTION. HELMLE & CORBETT, ARCHITECTS. THIS BUILDING WILL FRONT 175 FEET ON VARICK STREET AND EXTEND 65 FEET EAST ON GRAND AND WATTS STREETS NEW YORK CITY

Reducing the Cost of Building

TWO recent happenings in the building life of Manhattan emphasize a condition which to those familiar with the subject has prevailed for several years, though its timeliness has never been felt so acutely as at the present time.

Early in May the Western Electric Company awarded Turner the contract for an 11-story and basement structural concrete and brick office, loft and warehouse building which is illustrated on the back cover of this pamphlet.

During the same week we signed contracts for the erection of the Varick Street Building, artist's drawing of which is shown on the front cover.

Both of these buildings are of a nature which until recently in New York would have been built of structural steel, brick, terra cotta, masonry or other similar material.

On the Western Electric Building accurate figures were taken comparing the cost of the skeleton frame of the building, (footings, columns, beams, girders, arches, spandrel beams, roof framing) if built of structural concrete (reinforced concrete) or of structural steel. McKenzie, Voorhees & Gmelin, the architects on this contract, reported to the owners that the structural concrete framing would cost approximately **40 per cent less** than the best figures obtainable for structural steel, terra cotta floor arches and concrete column fireproofing. This statement was based upon estimates taken in March and April, 1920.

On the Varick Street building no steel figures were taken but cost sheets prepared in great detail by our Estimating Department show a difference on the entire building including plumbing, heating, lighting, elevators and sprinklers of **20 per cent** in favor of the concrete building as compared to a conventional design of structural steel frame, brick walls and either terra cotta or cinder concrete floor arches.

12-story manufacturing loft building erected by us entirely of reinforced concrete for the Robert Gair Company in 1916 at Water and Main Streets, Brooklyn, N. Y., at a cost of ***18 per cent less*** *than steel and brick construction. Wm. Higginson, Architect*

Loft and Office Buildings of Structural Concrete

THE object of this Bulletin is to bring home to its readers the thought that a great many 8, 10 and 12-story office and loft buildings built in Greater New York of structural steel and brick could be much more economically and just as satisfactorily erected if their frames were of reinforced concrete. The term "structural concrete" fits the real analogy which exists between a structural steel frame and a frame of reinforced concrete.

Our Estimating Department with great care has analyzed the costs as of June 15th, 1920, of the footings, columns, floors and roof of a 10-story loft building and finds that the costs of the different types of construction compare as follows:

1. All reinforced concrete, $1.50 per sq. ft.
2. Reinforced concrete except that the steel cores were used in both exterior and interior columns, $1.90 per sq. ft.
3. Structural steel with terra cotta or cinder concrete floor arches, $2.50 per sq. ft.

Four manufacturing loft buildings of the Robert Gair Company, Brooklyn, erected by us entirely of reinforced concrete. From left to right, Building No. 7, 12 stories with 16 story tower, erected 1914; Building No. 6-A, 12 stories, erected 1916; Building No. 6-B, 10 stories, erected 1919; Building No. 6, 10 stories, erected 1913. Average cost ***22 per cent less*** *than if of steel and brick*

The above figures, of course, cover merely the rough skeleton frame of the building. But it is a fact that the walls, windows, doors, plastering, floor finish, excavation and mechanical equipment of the building are essentially common factors in either type of skeleton frame.

Throughout this Bulletin, representative concrete skeleton buildings are shown which for all practical purposes are typical loft structures. With the present high cost of buildings there is added reason to adopt reinforced concrete as a material for loft and office building construction.

Estimates

We shall be very glad upon inquiry from those who may be seriously interested in this type of building to prepare accurate estimates of the cost of such buildings and we invite comparison of our figures with bids on other designs, the skeleton frames of which are of structural steel.

Bush Building, No. 133 West 41st Street, Manhattan, 9-story and basement office and loft building of brick, steel and concrete.
Helmle & Corbett and William Higginson, Associated Architects

ON the opposite page appears a photograph of the Bush Sales Building, between 6th Avenue and Broadway, a 9-story and basement office and loft building with reinforced concrete (structural concrete) skeleton with steel cores in the interior columns in the lower stories. This building was erected by us in 1917. The building adjoins the 32-story Bush Sales Building on 42nd Street which is built entirely of structural steel and brick.

Mr. Irving T. Bush for whose different companies we have built 22 reinforced concrete buildings at a total cost of close to $10,000,000, knows the merits of various types of material, having used them all in Brooklyn, Manhattan and now in London, England. His 32-story building in the Times Square district was naturally built of structural steel. The 10-story loft building he built of a combination of structural concrete, steel cores and brick, with a saving which in his opinion amounted to $15,000 over what a straight structural steel building would have cost at that time.

In South Brooklyn at the great Bush Terminal, we have built 6-story, 8-story and 12-story buildings all of reinforced concrete or of reinforced concrete with structural steel cores in some of the lower story columns. These buildings were built over a period of years extending from 1905 to date at an average cost of **20 per cent. less** than any other Class A fireproof type of building could be erected for.

Interior view of typical floor of Bush Sales Building

The fact that over 300 tenants representing 120 different industries occupy these Bush Terminal Model Loft Buildings, is one of the best answers to be had in America on the general usefulness of reinforced concrete buildings. Practically every problem of tenancy imaginable has been raised and met in the 6,000,000 square feet of Bush floor space.

In time, quality and cost, these Bush Buildings in Brooklyn compare favorably with any buildings in Manhattan. Their appearance alone may count against them. Appearance, however, in the South Brooklyn Terminal is one thing, on 41st Street in the Times Square District is another, and when it is important this objection can be met as exemplified in the illustration on the opposite page.

IN the popular mind there appears to exist certain misapprehensions concerning concrete buildings of the loft type. In each case we have attempted in a conservative way to set forth the facts:

1—The question of **column sizes** is more or less answered in each of the buildings illustrated in this Bulletin. A great deal of misunderstanding exists about concrete columns. It is generally true, considering buildings up to 12 stories in height, that a circular concrete column can be built on a diameter equal to the diagonal of the square steel column. As for example, a steel column 24 inches out to out of fireproofing and plastering, has a diagonal of approximately 34 inches. This would be fair diameter for concrete columns, in a 12-story, 150 lb. live load loft building. In many cases where there is a real and not a sentimental objection to this size concrete column, a steel or cast iron core can be substituted on the first two or four or even six stories, in which case the concrete skeleton building will still cost considerably less than the better known or steel type of building.

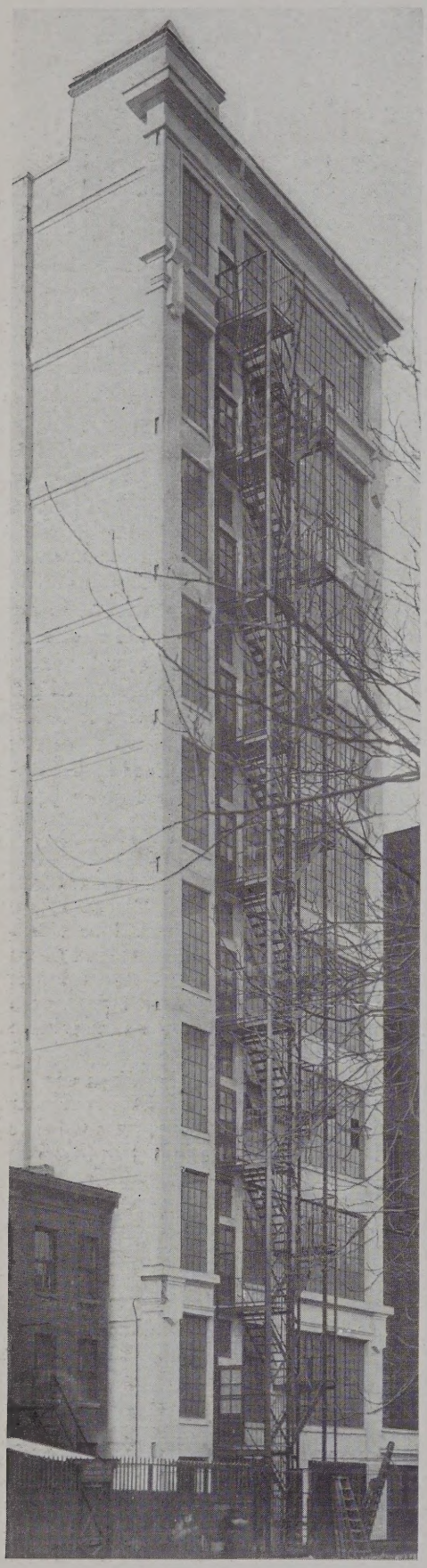
The use of steel cores in interior columns should usually be determined only after careful estimates have been made of the extra capital invested in these steel cores and the rental value of the floor saved due to the difference in size between the steel-core-concrete-column and a plain-reinforced-concrete-column.

Take for example in the Walker Building (see page 8) using 1920 prices: steel cores add approximately $30,200.00 to the cost of the building above what all reinforced concrete columns would have cost. The steel-core-interior-columns occupy a total floor area on the 12 floors of 392 square feet. Reinforced concrete columns would have occupied 640 square feet. The difference, or 248 square feet would be worth in Manhattan for buildings of this kind to-day, at least $2.00 per square foot per annum. The extra cost of steel columns at 6 per cent. interest amounts to $1,812.00 per year, or a saving in favor of the concrete column over the steel column of $1,316.00 per year.

2—As to the **speed** at which concrete buildings can be built, some of the records stated in this Bulletin speak for themselves. As a matter of fact, on the average, from the time decision is made to start work, a concrete building can usually be completed as quickly if not more quickly than a steel building. The dependability and experience of the contractor are factors in backing up this statement. We are very willing to put our average time of completion against that of any other contractor.

3—Formerly it was true that difficulties were encountered in obtaining **loans** (either permanent or building) on reinforced concrete structures. This condition has largely passed away. The Metropolitan Life Insurance Co. to-day is having us build a $2,000,000 concrete building for their own use in Long Island City. The Prudential Insurance Co. has placed a $2,000,000 mortgage loan on the Western Electric Co. building described in this pamphlet. We know of **no case** where loans have been refused on account of the projected building being of concrete. To-day, no sane financial man will seriously question the merit of reinforced con-

(*Continued on page 9*)



American Lead Pencil Company Building

(shown on the left) is 10 stories 68′ x 41′ in plan, located at Willow Ave. and 5th St., Hoboken. It was erected by us in 1915 according to the plans of F. M. Small, Architect.

An interesting detail is the pockets left in each wall column on the near side for future expansion.

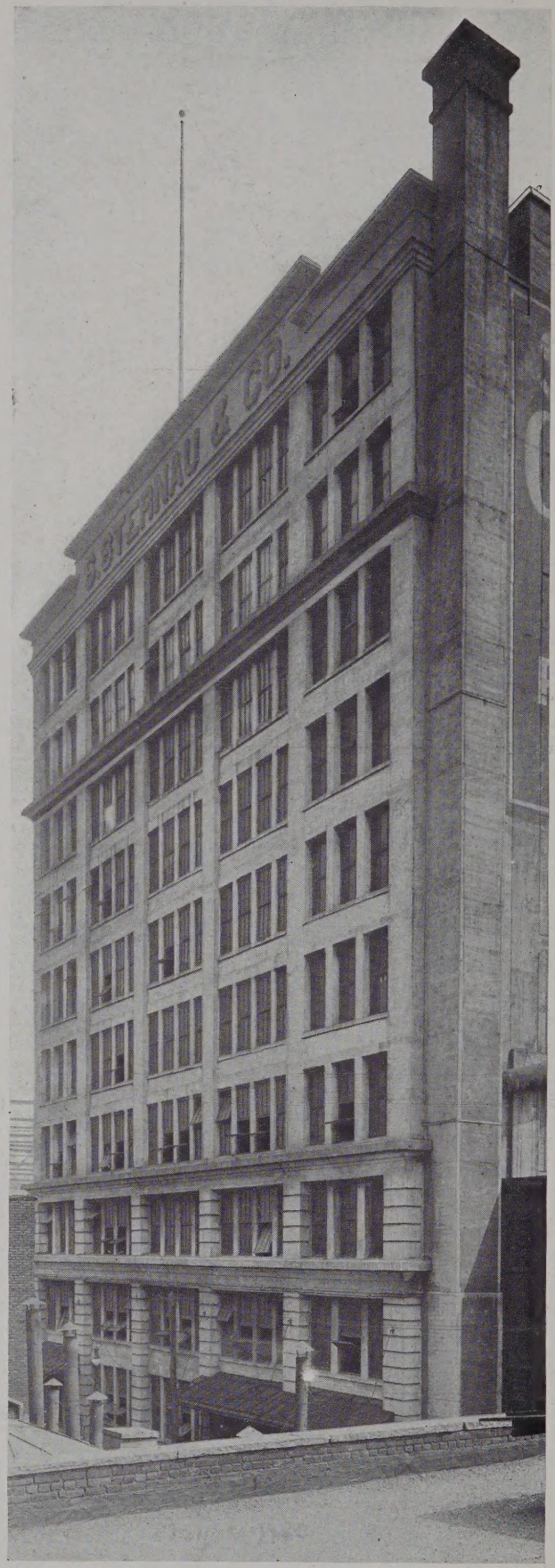
It is estimated by the owners that this building cost them **21 per cent. less** than any other fireproof type of building.

This building was completed in 7 months and is one of 50 or more reinforced concrete buildings 10 or more stories in height in the Metropolitan Territory.

The S. Sternau Co. Building

(shown on the right) at John Street, near Gold Street, Brooklyn, N. Y., was built by us in 1911, according to plans of Wm. Higginson, Architect.

This is a manufacturing loft building designed for 200 lbs. floor loads and might just as well have been on one of the streets of Lower Manhattan as in Brooklyn. No structural steel was used. The cost to-day would be about $4.70 per square foot of floor area complete ready for occupancy, or 37 cents per cubic foot.

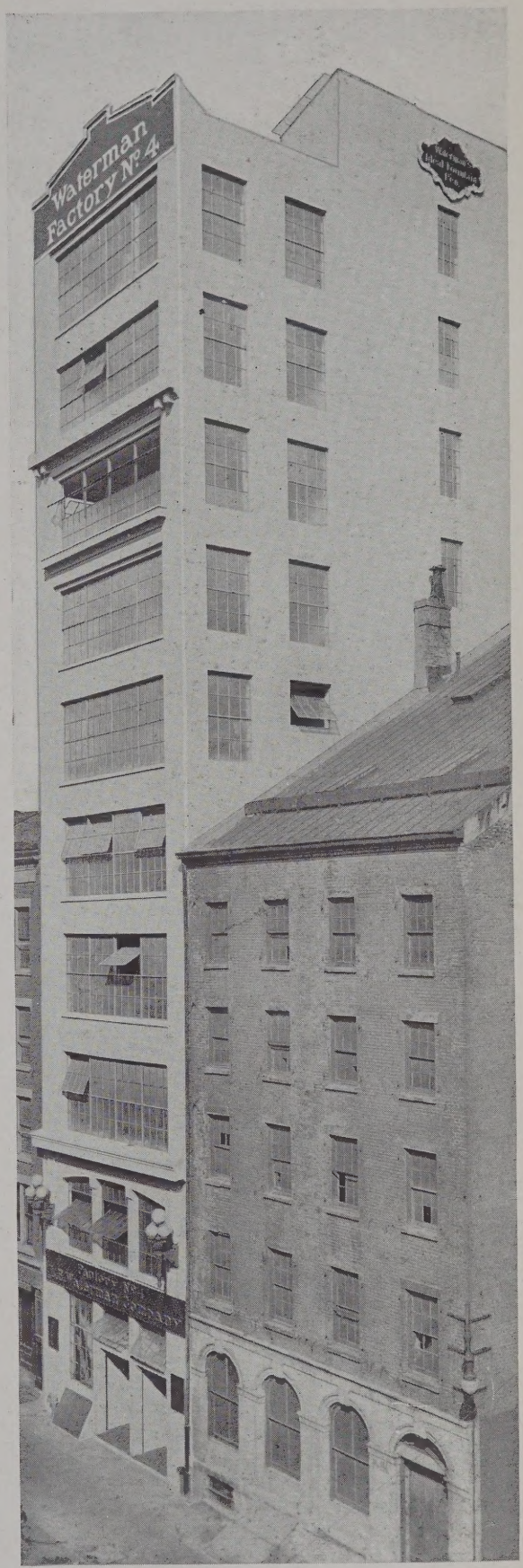


The Daggett & Ramsdell Building

at left is a reinforced concrete, flat slab building, built by us in 1916 according to plans of Timmis & Chapman, Architects. The front is white terra cotta and white brick. The building is located at 214 W. 14th St., Manhattan, and is used as a manufacturing, office and loft building. The cost today would be $7.35 per square foot of floor area—a figure fully **15 per cent. less** than any other fireproof construction.

The L. E. Waterman Co. Factory No. 4

at the right, was built by us in 1915 at 163 Front St., Manhattan, N. Y., in accordance with plans of Ludlow & Peabody, Architects. This is one of four buildings we have erected for the use of this company. They seem well satisfied that concrete costs much less than steel and brick and has no drawbacks when in use.



Wm. H. Walker & Co. Building, No. 35 Franklin Street, Buffalo, N. Y. A fine example of what is being done very frequently in the Middle and Far West. It was this type of building that showed up so well in the San Francisco and Baltimore fires. None came through better.

THE building shown opposite was erected by us in 1915 according to the plans of Lockwood, Greene & Co., Engineers and Architects. It is entirely of reinforced concrete except for brick curtain walls and steel cores in the interior columns which were required in order to meet the owners' wishes as to maximum column size. The wall columns are entirely of reinforced concrete.

This building is used for manufacturing, for storage and for offices, and for show-rooms on the ground floor. The interior view on this page gives a good idea of the ground floor.

While we used brick curtain walls on this building, more floor space would have been gained by using 8" concrete walls. Our experience on 700 buildings leads to the opinion that an 8-inch concrete wall is as tight if not tighter than a 12-inch brick wall and we rarely have had any trouble with concrete walls even though they have not been waterproofed in any way.

The average loft building of this character if built of reinforced concrete, either beam and girder or flat slab (but particularly so with flat slab) needs no plastering except perhaps in the entrance halls or the store floor.

Where loft buildings have to be built adjacent to old buildings, it is possible to pull the wall columns into the interior of the building 4 or 6 feet and take advantage of the flexibility and homogeneous nature of reinforced concrete from a design point of view, carrying the exterior walls on cantilevered floors. On some narrow city lots this might be a highly important factor in favor of a building.

The Doehler and Sperry buildings appearing on pages 10 and 11 were not only built very expeditiously but for an economical price compared to what any other fireproof type of building would have cost. If the Doehler building were to be built to-day its cost, if the same type of construction were used, namely, structural concrete, would be about **22 per cent. less** than if built of steel and brick. For the Sperry building the savings would probably amount to **18 per cent.** These percentages are based upon many scores of estimates which have been prepared in great detail on exact prices and have the authority behind them of many competitions where concrete has won over structural steel on actual bids received.

(Continued from page 5)

crete as a building material. Anyone who has been to Atlantic City and has looked with appreciation on the massiveness and high degree of finish on such great hotels as the Marlborough-Blenheim, the Traymore, the Chelsea, and the Breakers, all of which are built of reinforced concrete, can any longer question the suitability of this material for purely utilitarian business buildings in New York City.

4—Nearly every loft and office building in Greater New York has granolithic **concrete floors.** Those that have not have wood floors and it is a well known fact that many concrete buildings used for industrial purposes have wood floors. There is, therefore, no structural or economical difficulty involved in this detail.

The choice is governed largely by willingness to pay the difference in cost.

Other arguments used against the adoption of concrete, which largely have been thrown out of court in the minds of the well informed, are dampness, difficulty of making changes, and doubt of safety. No real objection holds on any of these counts.

Why Use Concrete for Loft Buildings? To Save Money and Time!

One of the best reasons of all other than the important ones of lower cost and better time that can be given for the wider adoption of structural concrete for loft and office buildings in the Greater City, is the fact that in the Middle West, South, Southwest and along the Pacific Coast, reinforced concrete is very widely used. In some cities as for example, Detroit or St. Louis, concrete is generally accepted as the standard material for any building under 12 stories in height. New York's conservatism and closeness to the money interests, which always must be forced to take up something new, is alone responsible for the fact that more of these buildings are not built within its bounds.

In these days of labor difficulties, the fewer the trades that are called in to erect the building the greater the chance of the building being completed on time. The erection of a reinforced concrete building to be used for loft or office building purposes involves fewer trades than the more conventional building of this same class.

Doehler Die Casting Co. Factory, Court and Huntington Streets, Brooklyn, N. Y. This building was built by us entirely of reinforced concrete in three sections—the 6-story portion in 1917 and the balance in two operations in 1918. This latter work constitutes what is believed to be the American record for speedy work. Two 10-story buildings including wrecking, excavation and occupancy in a total elapsed period of FIVE MONTHS! The war was on and it had to be done. While today we cannot quite duplicate this speed, we are prepared to get concrete buildings up in good time

11-story manufacturing loft building for the Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y. Helmle & Corbett, Architects. Built by us in two sections, 1915 and 1917. First section having 16,670 sq. ft. per floor, turned over complete in 10 months from starting plans—second section half the size in same time. Plans were developed as work on footings went along. This is characteristic of concrete construction—no waiting for complete steel plans. Time is a big factor in favor of concrete instead of against it as used to be thought. Time and cost both argue in indisputable cold figures in favor of concrete. This particular building would look well anywhere and for any usage. No structural steel was used here at all

The exterior of structural concrete buildings may be brick, terra cotta or stone. Witness the Western Electric building shown on the back cover, or the Daggett & Ramsdell on page 7. The main thing to grasp is the economy of a reinforced concrete frame. Many examples of 10, 11, 12 and 13-story concrete buildings exist in the Metropolitan district. The Loose-Wiles Biscuit building in Long Island City, the Bush Terminal in South Brooklyn or the Hoboken Terminal at 14th Street, Hoboken, are notable examples of this kind and also of our work.

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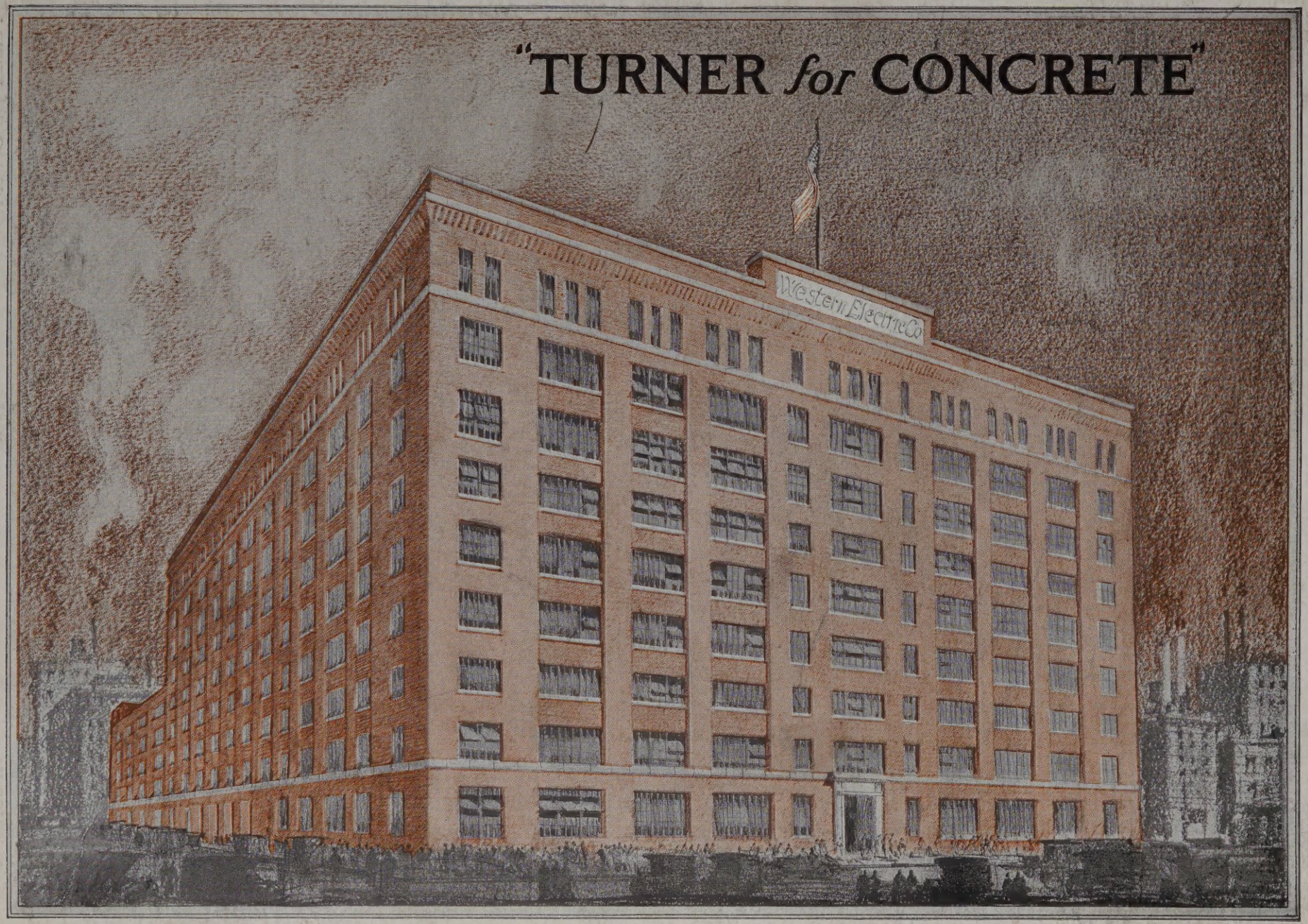

Eleven-story building for the Western Electric Co., now under construction, which will occupy the entire block surrounded by Hudson, West Houston, Greenwich and Clarkson Streets, New York City. McKenzie, Voorhees and Gmelin are the architects. This structure will cover an area of 331 x 200 feet and will be built throughout of reinforced concrete with the exception of a brick veneer on the exterior walls. This building will be occupied jointly by the Western Electric and the New York Telephone Companies.